



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/529,625	11/18/2005	Johannes Baur	5367-159PUS	1890

27799 7590 01/22/2009
COHEN, PONTANI, LIEBERMAN & PAVANE LLP
551 FIFTH AVENUE
SUITE 1210
NEW YORK, NY 10176

EXAMINER

WILSON, SCOTT R

ART UNIT	PAPER NUMBER
----------	--------------

2826

MAIL DATE	DELIVERY MODE
-----------	---------------

01/22/2009

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/529,625	Applicant(s) BAUR ET AL.	
	Examiner SCOTT R. WILSON	Art Unit 2826	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 28 April 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 2-26 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 2-10 and 16-26 is/are rejected.
- 7) ☒ Claim(s) 11-15 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 30 March 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>3/30/05</u> . | 6) <input type="checkbox"/> Other: _____ |

Art Unit: 2826

DETAILED ACTION***Election/Restrictions***

Applicant's provisional election with traverse of claims 2-22 and 26 in the response filed 4/28/08 is acknowledged. However, the restriction requirement of 3/25/2008 made under PCT Rule 13.1 is withdrawn, since the claims of Group I and Group II, identified therein, are linked to form a single inventive concept.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in-

(1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effect under this subsection of a national application published under section 122(b) only if the international application designating the United States was published under Article 21(2)(a) of such treaty in the English language; or

(2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that a patent shall not be deemed filed in the United States for the purposes of this subsection based on the filing of an international application filed under the treaty defined in section 351(a).

Claims 26, 2-10 and 19-15 are rejected under 35 U.S.C. 102(e) as being anticipated by Slater, JR. et al. (US 2003/0015721 A1)(Slater). As to claim 26, Slater, Figures 6 and 9, discloses (paragraph [0052]) a radiation emitting semiconductor component comprising: a radiation-transmissive substrate (20) with inclined side areas and having a refractive index (n_1), a radiation generating layer (32)(paragraph [0054]) arranged on an underside of said substrate and having a refractive index (n_2), wherein the refractive index of the substrate (n_1) is greater than the refractive index (n_2) of the radiation generating layer (paragraph [0022]), and the difference therebetween results in an unilluminated substrate region (the corner near the label (40b) of Figure 9) into which no photons are coupled directly from the radiation generating layer, and wherein the substrate has essentially perpendicular side areas in the unilluminated region.

Art Unit: 2826

As to claim 2, Slater, Figure 6, discloses that that side of the radiation-generating layer (32) which is remote from the substrate (20) is provided for the mounting of the component, via layers 34, 36, 55 and 60.

As to claim 3, Slater, Figure 6, discloses that a mounting area (60) is formed on that side of the radiation-generating layer (32) which is remote from the substrate (20).

As to claim 4, Slater, Figure 9, discloses that the perpendicular side areas form a base on the underside of the substrate, the inclined side areas adjoining the top side (20b) of said base.

As to claim 5, Slater, Figure 9, discloses that the upper boundary of the unilluminated region coincides with the upper boundary of the base.

As to claim 6, Slater, Figure 6, discloses (paragraph [0042]) that the thickness of the barrier layer (36) may be as large as 5 μm , which would make the height of the base (20c) within the scope of being between 15 and 30 μm .

As to claim 7, Slater, Figure 6, discloses that the inclined side areas form an angle of about 45°, which is within the scope of being between 15 and 40° with the underside of the substrate.

As to claim 8, Slater, Figure 6, discloses the thickness of barrier layer to be as much as 5 μm , which, at the scale of Figure 6, would be within the scope of the substrate having a width as little as 300 μm on the underside.

As to claim 9, Slater, Figure 6, discloses the thickness of barrier layer to be as much as 5 μm , which, at the scale of Figure 6, would be within the scope of the substrate (20) having a thickness as small as 200 μm .

As to claim 10, Slater, Figure 9, discloses that the radiation-generating layer (30) covers the underside of the substrate apart from an outer free edge (near label 40b) having a width which is within the scope of being between 10 and 50 μm , since the barrier layer (36), as shown in Figure 6, is itself as large as 5 μm in thickness.

As to claim 19, Slater discloses (paragraph [0022]) that the substrate may contain silicon carbide.

Art Unit: 2826

As to claim 20, Slater does not expressly disclose the 6H polytype of SiC, however, it is known that hexagonal 6H silicon carbide is one of several optically transparent polytypes. See, for example, Basceri et al. (US 2006/0174825), paragraph [0055].

As to claim 21, Slater discloses (paragraph [0022]) that the radiation generating layer may contain gallium nitride.

As to claim 22, Slater, Figure 6, discloses the thickness of barrier layer to be as much as 5 μm , which, at the scale of Figure 6, would be within the scope of the underside of the substrate having a width as little as 300 μm .

As to claim 23, Slater discloses (paragraph [0051]) a method for producing a radiation-emitting semiconductor component as claimed in claim 26, having the following steps: a) sawing of V-shaped trenches into a radiation-transmissive substrate by means of a suitably shaped saw, a residual thickness of the substrate remaining throughout, b) singulation of the substrate into a multiplicity of individual substrates along the trenches, all embodied by dicing the precursor substrate (10) into individual diodes (100).

As to claim 24, the dicing disclosed by Slater (paragraph [0051]) is within the scope of the singulation being effected by means of a saw having a straight saw blade.

As to claim 25, the dicing disclosed by Slater (paragraph [0051]) is within the scope of singulation effected by breaking.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 16-18 are is rejected under 35 U.S.C. 103(a) as being unpatentable over Slater in view of Nozaki et al. (US 5,744,828). As to claim 16, Slater discloses the device of claim 26, as described above.

Art Unit: 2826

Slater does not disclose expressly contact elements of a specific geometry formed on the top side of the substrate. Nozaki et al., Figures 1 and 2, discloses contact elements (22) arranged on the top side of a contact layer (7) and current diffusion layer (6), where the transverse conductivity of the current diffusion layer leads to a conical extension of a current coupled into the current diffusion layer from the contact element (22), and the contact elements (22) are spaced apart from one another in such a way that the current expansion cones (shown dashed in Figure 2) touch one another at a depth (T), given approximately by the boundary between layers (6) and (5), at which the entire cross-sectional area of the current diffusion layer is energized. At the time of invention, it would have been obvious to a person of ordinary skill in the art to form the contact elements of Nozaki et al. on the substrate of Slater. The motivation for doing so would have been to improve the light emission efficiency of the device (Nozaki et al., Abstract). Therefore, it would have been obvious to combine Nozaki et al. with Slater to obtain the invention as specified in claim 16.

As to claim 17, Nozaki et al, Figure 1, discloses that the contact elements are interconnects (22) running along nested squares, the squares having equidistant side edges parallel to one another.

As to claim 18, Nozaki et al., Figure 1, discloses that the interconnects (22) may have widths that differ from one another in accordance with the surface of the substrate (6) that is to be energized. For example, the interconnect width at the intersection of a square with a diagonal element is slightly wider than the width of a square alone.

Allowable Subject Matter

Claims 11-15 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. No prior art, including Slater, disclose the claimed device where the radiation generating layer, embodied as (30) in Figure 9 of Slater, for example, has beveled side edges which reflect the light emitted laterally with respect to the substrate in the direction of the substrate.

Art Unit: 2826

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Scott R. Wilson whose telephone number is 571-272-1925. The examiner can normally be reached on M-F 8:30 - 4:30 Eastern.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Sue Purvis can be reached on 571-272-1236. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

srw
January 22, 2009

/Evan Pert/

Primary Examiner, Art Unit 2826